What is claimed is:

1. A stable, biocompatible colloidal dispersion comprising a liquid dispersed phase and an aqueous continuous phase, said dispersed phase comprising a liquid having a boiling point below about 40°C.

2. The colloidal dispersion of claim 1 wherein said chemical is selected from the group consisting of aliphatic hydrocarbons, organic halides, and ethers, where each member of the group has six or fewer carbon atoms.

3. The colloidal dispersion of claim 1 wherein said chemical is a fluorine-containing compound.

4. The colloidal dispersion of claim 1 wherein said fluorine-containing compound has a molecular weight of less than 300.

5. The colloidal dispersion of claim 2 wherein said chemical is selected from the group consisting of n-pentane, isopentane, neopentane, cyclopentane, butane, cyclobutane, decafluorobutane, dodecafluoropentane, dodecafluoroneopentane, perfluorocyclopentane.

6. The colloidal dispersion of claim 1 wherein said dispersion further comprises an amphiphilic material.

7. The colloidal dispersion of claim 6 wherein said amphiphilic material has a relative HLB matched to said dispersed phase liquid.

8. The colloidal dispersion of claim 6 wherein said amphiphilic material comprises a biocompatible protein.

9. The colloidal dispersion of claim 6 wherein said amphiphilic material comprises at least one surfactant.

10. The colloidal dispersion of claim 8 wherein said protein is selected from the group consisting of albumin, fibrinogen, fibrin, serum globulins, hemoglobin, myoglobin, and immunoglobulins.

11. The colloidal dispersion of claim 6 wherein said amphiphilic material comprises a polyoxypropylene-polyoxyethylene glycol nonionic block copolymer.

12. The colloidal dispersion of claim 11 wherein said amphiphilic material is selected from the group consisting of Poloxamer 181, 188, 231, 282, 331, 401, 402, and 403.

13. The colloidal dispersion of claim 7 wherein said amphiphilic material comprises a fluorine-containing surfactant.

14. The colloidal dispersion of claim 13 wherein said fluorine containing surfactant is selected from the group consisting of Zonyl FSO, FSN, FSA, and FSJ.

15. The colloidal dispersion of claim 7 wherein said amphiphilic material is selected from the group of surfactants consisting of anionic, cationic, nonionic, or zwitterionic molecules.

16. The colloidal dispersion of claim 7 wherein said amphiphilic material comprises at least one surfactant selected from the group of surfactants which contain, as hydrophilic groups, one or more of the following chemical groups: sulfonate, sulfate, carboxylate, phosphate, ammonium, quaternary ammonium, betaines, sulfobetaines, polyoxyethylene, polyols, alcohols, ethers, polypeptide, or polyglycidyl; and as hydrophobic groups, one or more of the following chemical groups: fatty acids, paraffins, olefins, alkyl benzenes, alcohols, alkylphenols, polyoxypropylenes, polypeptides, fluorocarbons, and silicones.

17. The colloidal dispersion of claim 7 wherein said amphiphilic material is present at a concentration such that the interfacial tension between water and the liquid dispersed phase is less than 26 dynes/cm.

18. The colloidal dispersion of claim 7 wherein said amphiphilic material is present at a concentration greater than 0.001% by weight per volume.

19. The colloidal dispersion of claim 1 wherein said dispersion further comprises a viscogen.

20. The colloidal dispersion of claim 19 wherein said viscogen is selected from the group consisting of glucose, iohexol, iopamidol, iopentol, sorbitol, sucrose, and polyethylene glycol.

21. The colloidal dispersion of claim 19 wherein the viscogen is present at a concentration

sufficient to produce a viscosity greater than 1.1 cP.

22. The colloidal dispersion of claim 19 wherein the viscogen is present at a concentration of between 0.001 and 75% by weight per volume.

23. The colloidal dispersion of claim 1 wherein said liquid dispersed phase comprises particles having an average diameter less than 1000 nm.

24. The colloidal dispersion of claim 1 wherein the concentration of said liquid dispersed phase is between 0.00001 to 166% by weight per volume.

25. The colloidal dispersion of claim 1 wherein the aqueous medium comprises an additive selected from the group of acidifying agents, alkalizing agents, antimicrobial preservatives, antioxidants, buffering agents, chelating agents, complexing agents, solubilizing agents, humectants, solvents, suspending agents, viscosity-increasing agents and tonicity agents.

26. The colloidal dispersion of claim 25 wherein said additive is present at a concentration such that the osmolarity of said aqueous medium is at least 250 mOm.

27. The colloidal dispersion of claim 1 wherein said liquid comprises a chemical selected from the group of chemicals containing 4 to 17 atoms.

28. The colloidal dispersion of claim 1 wherein said liquid comprises a chemical selected from the group of chemicals of the form $C_5H_XF_Y$.

29. A biocompatible colloidal dispersion for use in ultrasound imaging of an animal having a body temperature T comprising a dispersed phase and an aqueous continuous phase, said dispersed phase including a chemical with a sufficiently high vapor pressure that a portion of said chemical is a gas at the temperature T.

30. A method of ultrasound imaging in an animal comprising the steps of:

(1) preparing a stable, biocompatible colloidal dispersion comprising a liquid dispersed phase and an aqueous continuous phase, said dispersed phase comprising a liquid having a boiling point below the body temperature of said animal.

(2) administering said dispersion to said animal to be imaged and waiting a time sufficient for said liquid dispersed phase to form microbubbles; and

(3) performing an ultrasound scan on a portion of said animal in which said microbubbles are distributed.

31. A method as in claim 30 wherein said chemical is selected from the group consisting of aliphatic hydrocarbons, organic halides, and ethers having six or fewer carbon atoms.

32. A method of preparing a storage stable colloidal dispersion comprising the steps of

(a) mixing at least one amphiphilic material with water to form an aqueous continuous phase;

(b) adding a liquid having a boiling point of less than 37°C to said continuous phase;

(c) comminuting the mixture manually, mechanically, or by the action of ultrasound for a

time sufficient to form a dispersion of particles with an average diameter of less than 5000 nm.

33. A method of preparing a storage stable colloidal dispersion comprising the steps of

(a) mixing at least one amphiphilic material with water to form an aqueous continuous phase;

(b) adding an amount of a gas which has a boiling point less than 37°C to said continuous phase; and

(c) condensing said gas to form a liquid dispersed phase of particles with an average diameter of less than 5000 nm.